

SPECTRAL ANALYSIS AND PERFORMANCE OF A 20KW CW UPLINK TRANSMITTER

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ABSTRACT

Under work being performed to upgrade the 20 Kilowatt CW uplink transmitters of the NASA Deep Space Network (DSN), the high voltage posubsystem, and **other** related subsystems, were examined in order to optimize performance, (long-term) stability, regulation), and enhance field reliability.

In a previous treatment, in this forum, power supply performance was described. This paper now continues the dialogue with performance effects on the power amplifier (Klystron). Depictions of phase noise performance and Allan variance performance, both before and after design modifications, are presented graphically. In conjunction, effects due to DC cathode heating versus AC cathode heating are verified and presented in terms of phase noise offsets/spurs. Practical implementations of these low-noise tests are also provided to document and facilitate future analyses.

The research described in this paper was carried out by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.